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REMARKS/ARGUMENTS

Claims 1-24 were presented and examined. The Office Action indicated objections to informalities in the specification and in claim 21. The Office Action required correction of one sheet of the drawings. The Office Action indicated rejected claims 1, 2, 5, 7-9, 13, 16, 22, and 23 under 35 USC § 103(a), as being unpatentable over Yuasa (USPN 6,085,238) in view of Ganz (USPN 6,049,549) in further view of Bobeck et al. (USPN 6,075,787). The Office Action indicated rejected claims 3, 4, 10-12, 14, 15, 17-21 and 24 under 35 USC § 103(a), as being unpatentable over Yuasa, Ganz, Bobeck, and in further view of Dowd et al. (USPN 6,141,755). Claim 6 was rejected under 35 USC § 103(a), as being unpatentable over Yuasa, Ganz, Bobeck, and in further view of "Official Notice". In this response, Applicant has amended claims 1, 3, 4, 9, 13, 21, and 22. Claims 1-24 remain pending.

Specification Objections

The Office Action indicated objections to informalities in the specification as filed. In response, Applicant has amended the specification as indicated above to address the objections noted in the Office Action and to correct additional typographical and grammatical errors in the specification as originally filed.

Drawing Objections

The Office Action required correction of the drawing sheet containing FIG. 5. In response, Applicant has submitted with this response a proposed replacement sheet and an annotated sheet showing changes. FIG. 5 has been amended in the replacement sheet by correcting the misspelled word "protocol" in block 502.

Claim rejections under 35 USC § 103(a)

The Office Action rejected claims 1, 2, 5, 7-9, 13, 16, 22, and 23 under 35 USC § 103(a), as being unpatentable over Yuasa (USPN 6,085,238) in view of Ganz (USPN 6,049,549) in further view of Bobeck (USPN 6,075,787). In response to these rejections, Applicant has amended each of the independent claims to recite that the claimed invention forms combined

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protocol data units (PDUs) by storing a payload of a first PDU within available or unused space within a payload of a second PDU. Because support for these amendments is found in the specification as filed, for example, at the paragraph beginning on page 7, line 23, FIG 4C of the drawings and the accompanying description thereof, no new matter is presented by these amendments.

Applicant would respectfully submit that the cited references fail to teach or suggest the use of available space within the payload of a second packet to store the payload of a first packet as recited in the independent claims as amended. The Office Action acknowledges that neither Yuasa nor Ganz describe the combining of PDU types when they share a common network address. The Office Action relies on Bobeck to support the Section 103(a) rejection. According to the Office Action, Bobeck discloses combining a first PDU stored in a buffer with a second PDU.

The cited references fail to teach or suggest all of the limitations of the independent claims as amended because neither Yuasa nor Ganz disclose the combining of PDUs and Bobeck explicitly teaches away from the concept of using available space in the payload of a second PDU to store the payload from a first PDU. A Section 103(a) rejection of a claim based on a combination of references is inappropriate unless the references teach or suggest all of the limitations of the claim. MPEP 2143.03.

Bobeck teaches away from the concept of conserving bandwidth by using available space in a second PDU to store the payload from a first PDU. Bobeck does describe a frame, which is analogous to a PDU, having different types of payloads such as variable length (VL) payloads, asynchronous transfer mode (ATM) payloads, and synchronous transfer mode (STM) payloads. In describing its sub-frames, however, Bobeck clearly indicates that any available or unused space within one of the payloads is not to be used for transferring any type of data, which would include transferring the payload of another PDU as recited in the amended independent claims.

Bobeck contains the following passage.

When there are not enough ATM cells...to completely fill the current ATR1 [a region of the frame], the portion of ATR1 that is otherwise unused *is filled with idle ATM PDUs*. An idle ATM PDU is fifty-three bytes in length, and therefore maintains synchronization within ATR1. ... The forty-eight byte pseudo-payload is appended to the header to maintain proper spacing and synchronization within

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ATR1, but no data is appended within that space. Idle ATM PDUs therefore, provide a method of padding ATR1 when the headend bandwidth manager allocates more bandwidth to ATR1 than required for the downstream transmission of ATM cells queued at the headend. (Column 12, lines 21-37 emphasis added).¹

It is clear from the passages referred to above that Bobeck is not concerned with conserving bandwidth and as such is not concerned with forming combined PDUs by storing the payload of a first PDU into unused portions of the payload of a second PDU. To the contrary, Bobeck describes a method of "killing" excess bandwidth by padding portions of Bobeck's frames with idle PDU's. In sharp contrast, the independent claims as amended herein now explicitly recite a means of conserving bandwidth by finding a constructive use for available space within a PDU. By combining two (or more) payloads into a single combined PDU when a second PDU has available space (i.e., the size of the second PDU is less than the maximum transmission size for the network), the present invention conserves bandwidth by reducing the number of total PDUs that are sent across the network. Because each PDU has bandwidth consuming overhead associated with it, fewer PDUs to convey the same amount of information results in more efficient use of the network. Because the independent claims as amended herein recite limitations neither taught nor suggested by the cited references, Applicant would respectfully request the Examiner to reconsider and withdraw the rejection of the independent claims as amended and all claims depending thereon.

In addition to the foregoing, Applicant has amended dependent claim 4 to recite a feature of the invention in which the combined PDU has at least two headers and wherein one of the headers indicates the size of the second payload only and a second header indicates the size of the combined payloads.² Because support for this amendment is found in the specification as filed at, for example, the paragraph beginning on page 10 line 16 through page 11, line 24, no new matter is presented by this amendment.

Applicant would respectfully submit that none of the cited references teach or suggest a combined PDU having one header that indicates the size of a combined payload within a

¹ See, also, Bobeck paragraph beginning on column 13, line 37, where another region of the Bobeck frame is described as having its unused portions filled with idle PDUs.

² The limitations of claim 4 as originally presented have been substantially incorporated into amended claim 3.

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combined PDU and another header that indicates the size of just a single payload in the combined PDU. In the context of the present invention, however, the recited limitation beneficially provides a mechanism that enables a NIC to process the combined PDU efficiently (by comparing the sizes of the payloads indicated by the two headers). Moreover, the use of payload header fields to convey this information is consistent to the embodiment of the invention in which the management PDUs are wholly processed at the data link level such that they never acquire the high level header fields of application packets. Since the different packet types are processed differently at the communication protocol stack level, the feature recited in amended claim 4 conforms to that convention by having different payload sizes depending upon the network level under consideration. Analogous arguments apply to claims 18-20 as originally presented.

In addition to the foregoing, Applicant would respectfully traverse the rejection of dependent claim 5, which recites a feature of the invention in which the first PDU is generated at a data link level and, therefore, includes only a MAC header (i.e., no IP header or TCP/UDP header). The Office Action states that, with respect to claim 5, Ganz teaches the usage of a data link level PDU including a MAC header, citing column 5, line 26 - column 7, line 62. Applicant would submit that, while Ganz does describe MAC layers, Ganz recites explicitly that "each session communicates through a standard communication protocol stack 310, implementing in this embodiment TCP/IP and UDP/IP protocols. Thus, it is clear that, while Ganz describes some processing at the data link level, Ganz in no way suggests that the upper levels of the protocol stack are eliminated for certain packets. Because claim 5 recites a packet that includes a MAC header only, Applicant submits that this feature of the invention is not disclosed or suggested by the cited references.

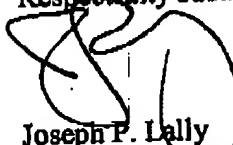
In this response, Applicant has addressed the objections to the specification and drawings and claim rejections under 35 USC § 103(a). Accordingly, Applicant believes that this response constitutes a complete response to each of the issues raised in the office action. In light of the amendments made herein and the accompanying remarks, Applicant believes that the pending claims are in condition for allowance. Accordingly, Applicant would request the Examiner to withdraw the rejections, allow the pending claims, and advance the application to issue. If the

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Examiner has any questions, comments, or suggestions, the undersigned attorney would welcome and encourage a telephone conference at 512.428.9872.

Respectfully submitted,



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Attachments